

CLAIM AMENDMENTS

Claim 1 (currently amended): A power supply connected to an AC, Alternating Current, power source of arbitrary waveform comprising [[a.]] an essentially inductive impedance [in series with] connected between said AC power source and [[b.]] a controllable essentially loss free electronic device with means to both sink and source AC current of an arbitrary waveform, [[c.]] means of controlling said electronic device, and [[d.]] a load connected in parallel with said electronic device whereby the power supplied to said load is regulated as desired.

Claim 2 (previously cancelled)

Claim 3 (previously cancelled)

Claim 4 (previously presented): A power supply as recited in claim 1 comprising a transformer connected to the mains and said essentially inductive impedance included in its primary or secondary circuits or both, or said essentially inductive impedance consisting of a considerable leakage inductance between the primary and at least one secondary, said load being distributed between said secondaries as needed.

Claim 5 (previously presented): A power supply as recited in claim 4 in which the voltage from at least one secondary is rectified by controllable valves and the charge stored in a capacitor, said valves being turned on and off by timing signals from an analog control circuit or a microprocessor so that said secondary performs as said essentially loss free electronic device being able to both sink and source current whereby the control circuit regulates the AC voltage across said secondary within a wide range.

Claim 6 (previously presented): A power supply as recited in claim 5 in which a load is also connected in parallel with said capacitor, and in which the DC, Direct Current, voltage across said capacitor and the current to said load are compared to DC reference voltages and regulated by feed back means whereby regulated and adjustable DC voltage and current from zero to maximum is available and AC regulated and adjustable voltage and current from a low value to maximum is available and the respective proportions of DC and AC power selectable as needed.

Claim 7 (previously presented): A power supply as recited in claim 6 in which the transformer has a plurality of secondaries, some intended for AC and some to provide DC whereby one DC unit is providing regulation and adjustment causing the others to follow and be regulated and adjusted as well.

Claim 8 (previously presented): A power supply as recited in claim 7 in which the controllable valves are mosfets with their switching speed reduced whereby a minimum of noise is caused.

Claim 9 (previously presented): A power supply as recited in claim 8 in which the timing sinusoidal signal is reduced to a semi square wave and integrated an even number of times to obtain a delay of 180 degrees or a multiple thereof whereby a resulting timing signal will be less influenced by noise from the mains.

Claim 10 (previously presented): A power supply as recited in claim 9 in which the resulting time signal has means to create a positive rising waveform comprising approximately 180 degrees and a mirrorlike falling waveform comprising the following 180 degrees so that two timing pulses are available during each cycle.

Claim 11 (previously presented): A power supply as recited in claim 10 which has means to limit the timing delay to the first 90 degrees of each half cycle.

Claim 12 (previously presented): A power supply as recited in claim 11 with means to further limit the range of delay whereby safeguarding against a too low mains voltage.

Claim 13 (previously presented): A power supply as recited in claim 12 having means to detect and eliminate down to an acceptable level DC current in the transformer windings whereby preventing saturation of the transformer and destruction of the power supply.

Claim 14 (previously presented): A power supply as recited in claim 13 adapted to uninterruptible service by including an oscillator with slightly lower frequency than the mains, a first fast switch to connect and disconnect the mains, a second fast switch to connect and disconnect a battery or other standby power source, and means to operate said switches at the correct times whereby the power supply will automatically switch to standby power in the event of a mains failure and go back to normal operation when the mains returns, the DC voltage from said capacitor being used to recharge the battery if any.

Claim 15 (previously presented): A power supply as recited in claim 14 in which four mosfets are used in a bridge whereby the voltage across each mosfet is limited to essentially the DC output voltage.

Claim 16 (previously presented): A power supply as recited in claim 15 in which two mosfets are used in a push pull configuration whereby the AC and DC outputs can use the same system ground and the voltage across each mosfet is approximately double the DC voltage.

Claim 17 (previously presented): A method of regulating an AC voltage comprising the steps of: [[a.]] supplying an AC utility power having a line frequency; [[b.]] connecting it to a load in series with an essentially inductive impedance; [[c.]] connecting a controllable device in parallel with the load said controllable device being able to essentially loss-free sink and source current; [[d.]] connecting a controller to said controllable device said controller steering the phase and amplitude of the current from and to the controllable device whereby the voltage across the load can be adjusted and regulated.

Claim 18 (previously presented): A method of regulating a DC voltage as described in claim 17, wherein said voltage across the regulating device is rectified by mosfet rectifiers and is charging a capacitor in parallel with the load, said controller to be using feed back methods and turning on and turning off the mosfets so that said capacitor is sourcing or sinking current whereby the DC voltage across the capacitor is being controlled and regulated.

Claim 19 (previously presented): A method as described in claim 18 supplying simultaneously both regulated and controlled AC and DC

Claim 20 (previously presented): A method as described in claim 19 wherein said capacitor is connected with a battery or other DC supply through a mosfet transistor, said controller including an oscillator normally synchronized with the mains but having a slightly lower

natural frequency than the mains and driving the mosfet rectifiers also when the mains has dropped out and using the power from the battery or other DC supply whereby the operation is continuing uninterrupted.

Claim 21 (previously presented): A power supply as recited in claim 1, said load being able to both sink and source power.